

REMARKS

Applicants note the filing of an Information Disclosure Statement herein on July 12, 2000 and note that no copy of the PTO-1449 was returned with the outstanding Office Action.

Applicants respectfully request that the information cited on the PTO-1449 (which is the same as that of record to that date in the parent application hereto) be made of record herein.

The Final Office Action mailed February 22, 2002, has been received and reviewed.

Claims 3 through 22 are currently pending in the application. Claims 3 through 22 stand rejected. Applicants respectfully request reconsideration of the application based upon the remarks herein.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 5,428,244 to Segawa et al. in View of U.S. Patent No. 5,438,006 to Chang

Claims 3 through 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Segawa et al. (U.S. Patent No. 5,428,244) in view of Chang (U.S. Patent No. 5,438,006).

Applicants respectfully traverse this rejection, as hereinafter set forth.

The *Official Action* bases the rejection of claims 3 through 22 under 35 U.S.C. § 103(a), in part, on the allegation that in one example of Segawa et al. the tungsten silicide layer and silicon oxide layer are formed at the same deposition temperature. This allegation, however, is not supported by the disclosure of Segawa et al. It is true that in at least one example disclosed by Segawa et al. both the tungsten silicide layer and the silicon oxide layer are formed from SH_2Cl_2 gas" as recited in the *Official Action*. However, Segawa et al. does not support the Examiner's claim that "since both the silicon oxide layer and tungsten silicide layer are formed from the SH_2Cl_2 gas, the two layers have the same deposition temperature." *See, Official Action* at 3 (citing Segawa et al. at col. 14, lines 5-8). Segawa et al. actually indicates that "this gives these two layers almost the same deposition temperature." *See, Segawa et al.* at col. 14, lines 7-8 (emphasis added). "Almost the same" and "the same" are two different things.

The description of the deposition process of Example VII, as disclosed by Segawa et al., clearly indicates that the deposition temperature of the tungsten silicide film and the silicon oxide

layer are not the same. Even though a flow of SH_2Cl_2 gas to the CVD reaction chamber of Example VII is kept at a constant rate, the temperature within the reaction chamber is changed between the deposition of the tungsten silicide film and the deposition of the silicon oxide film. Specifically, "(1) the supply of WF_6 gas is brought to a halt, (2) at the same time, the chamber temperature is increased up to 650°C to 700°C, and (3) N_2O gas is introduced into the chamber at a flow rate of 0.4 to 0.6 lit. per minute (from t2 in FIG. 13)." *See, Segawa et al.* at col. 13, lines 55-59 (emphasis added). The introduction of the N_2O gas, which initiates and is required for the deposition of the silicon oxide, does not occur until after the temperature within the deposition chamber is raised above 600 °C. The fact that the temperature is above 600 °C for the deposition of the silicon oxide layer is further supported by FIG. 13 of Segawa et al. FIG. 13 clearly shows that prior to the time that the WF_6 flow ceases (time t1) the temperature is being raised within the deposition chamber. At the time the flow of N_2O is initiated (time t2) the temperature is already well above 600 °C. Because N_2O must be present for the deposition of the silicon oxide, the earliest time at which the deposition of the Segawa et al. dielectric cap layer can begin is time t2. At time t2, the temperature in the deposition chamber is above 600 °C as disclosed by Example VII and illustrated in FIG. 13.

Segawa et al. does not disclose "depositing a dielectric cap layer over said metallic silicide film at a temperature below about 600 °C" as recited in claims 3 or 19. Although the deposition temperature may be "almost" the same, Segawa et al. fails to teach or suggest all of the limitations of claims 3 and 19, specifically that the dielectric cap layer deposition temperature is below about 600 °C. The failure of the combined references to teach all of the claimed limitations of independent claims 3 and 19 precludes the obviousness rejection of claims 3 and 19 because a *prima facie* case of obviousness is not established. *See, In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)(“To establish a *prima facie* case of obviousness...the prior art reference (or references when combined) must teach or suggest all the claim limitations.”).

Claims 4 through 16 depend from claim 3 and are therefore allowable as dependent claims. *See, In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988)(dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious). Furthermore, the independent reasons for allowance of claims 4 through 7 as

recited in the Amendment filed on December 6, 2001 still stand because the combined references fail to teach or suggest all of the claim limitations of each of claims 4 and 7. Those reasons for allowance as set forth in the prior Amendment herein are incorporated herein by reference.

Claims 20 through 22 depend from independent claim 19 and are also allowable as dependent claims from an allowable independent claim. *See, In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

Independent claim 17 recites the limitation of "forming a dielectric cap on said metallic silicide film at a sufficiently low temperature that said metallic silicide film remains in said non-annealed state." This limitation is not taught by the cited references and the lack of such teaching was acknowledged in previous *Official Action* as recited in the Amendment filed on December 6, 2001. The failure of the cited references to teach all of the limitations of claim 17 precludes a *prima facie* obviousness rejection. *See, In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Claim 17 is allowable.

As a dependent claim of an allowable independent claim, claim 18 is also allowable. *See, In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). Furthermore, claim 18 specifically recites "forming said dielectric cap...at a temperature below about 600 °C" which is not disclosed by the combined references.

CONCLUSION

Claims 3 through 22 are believed to be in condition for allowance, and notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

Respectfully Submitted,


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